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What is claimed is:

1. An antibody capable of specifically inhibiting the fusion of an HIV-1 envelope glycoprotein cell with an appropriate CD4⁺ cell without cross reacting with the HIV-1 envelope glycoprotein or CD4 and capable of inhibiting infection by one or more strains of HIV-1.
2. A monoclonal antibody of claim 1.
- 10 3. A hybridoma cell line producing the monoclonal antibody of claim 2.
- 15 4. A chimeric monoclonal antibody of claim 2.
5. A humanized monoclonal antibody of claim 4.
6. A human monoclonal antibody of claim 2.
- 20 7. A single chain antibody or an antigen binding antibody fragment of claim 2.
8. A monoclonal antibody capable of competitively inhibiting the binding of the monoclonal antibody of 25 claim 2 to its target molecule.
9. The monoclonal antibody of claim 2, 4, 5, 6, 7, or 8 labelled with a detectable marker.
- 30 10. A monoclonal antibody of claim 9 wherein the detectable marker is a radioactive isotope, enzyme, dye or biotin.
- 35 11. A pharmaceutical composition comprising the complete or a portion of the monoclonal antibody of claim 2,

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4, 5, 6, 7 or 8 and a pharmaceutically acceptable carrier.

- 5 12. A method of inhibiting HIV-1 infection in a subject comprising administering an effective amount of the pharmaceutical composition of claim 11 to the subject.
- 10 13. An isolated nucleic acid molecule encoding the complete or a portion of the light chain protein of the monoclonal antibody of claim 2, 4, 5, 6 or 8.
- 15 14. An isolated nucleic acid molecule encoding the complete or a portion of the heavy chain protein of the monoclonal antibody of claim 2, 4, 5, 6 or 8.
- 15 15. An isolated nucleic acid molecule encoding the single chain antibody of claim 7.
- 20 16. A vector comprising the nucleic acid molecule of claim 13, 14 or 15 operably linked to a promoter of RNA transcription.
- 25 17. A vector comprising the nucleic acid molecules of claims 13 and 14 each operably linked to a promoter of RNA transcription.
- 30 18. A host vector system comprising one or more vectors of claim 16 or 17 in a suitable host cell.
- 35 19. A host vector system of claim 18, wherein the suitable host cell is selected from a group consisting of a bacterial cell, an insect cell, a yeast cell or a mammalian cell.

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- 5 20. The molecule specifically recognized by the monoclonal antibody of claim 1.
- 10 21. A glycolipid molecule of claim 20.
- 15 22. A polypeptide molecule of claim 20.
- 20 23. An isolated nucleic acid molecule encoding the complete or a portion of the polypeptide of claim 22.
- 25 24. A multichain polypeptide molecule comprising the polypeptide of claim 22.
- 30 25. A soluble protein comprising a portion of the polypeptide of claim 22 or 24.
- 35 26. A pharmaceutical composition comprising an effective amount of the soluble protein of claim 25 to inhibit HIV-1 infection and a pharmaceutically acceptable carrier.
- 40 27. A method of inhibiting HIV-1 infection in a subject comprising administering an effective amount of the pharmaceutical composition of claim 26 to the subject.
- 45 28. An isolated nucleic acid molecule encoding the complete or a portion of a polypeptide of the multichain polypeptide molecule of claim 24.
- 50 29. A vector comprising the nucleic acid molecule of claim 23 or 28 operably linked to a promoter of RNA transcription.

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30. A host vector system comprising the vector of claim 29 in a suitable host cell.
31. A host vector system of claim 30, wherein the suitable host cell is a selected from a group consisting of a bacterial cell, an insect cell, a yeast cell or a mammalian cell.
32. A method for identifying inhibitors of HIV-1 infection comprising steps of:
- 10 (a) contacting an effective amount of a compound with a system which contains HIV-1 gp120, HIV-1 gp41 or a fragment thereof with the molecule of claim 20 under conditions permitting formation of a complex between HIV-1 gp120, HIV-1 gp41 or a fragment thereof and the molecule, so as to inhibit such formation; and
- 15 (b) determining the amount of complex formed; and
- (c) comparing the amount determined in step (b) with the control which is without the addition of the compound, a decrease in the complex formation indicating that the compound is capable of inhibiting HIV-1 infection.
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- 25 33. A method of claim 32, wherein the compound is not previously known.
34. The compound identified by claim 33.
- 30 35. A pharmaceutical composition comprising the compound identified by the method of claim 32 and a pharmaceutically acceptable carrier.
- 35 36. A method of inhibiting HIV-1 infection in a subject comprising administering an effective amount of the

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pharmaceutical composition of claim 35 to the subject.

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- 5 37. A kit for identifying inhibitors of HIV-1 infection which comprises, in separate compartments:
 (a) purified HIV-1 gp120, HIV-1 gp41 or a fragment thereof; and
 (b) the molecule of claim 20.
- 10 38. A transgenic nonhuman animal which comprises an isolated DNA molecule encoding the molecule of claim 22 or 24.
- 15 39. The transgenic nonhuman animal of claim 38 further comprising an isolated DNA molecule encoding the full-length or portion of the CD4 molecule sufficient for binding the HIV-1 envelope glycoprotein.

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